

A NEW SPECIES OF *PANACCA* FROM CHILE
(BIVALVIA: PHOLADOMYOIDEA: PARALIMYIDAE)

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ABSTRACT

Panacca chilensis is described from off the Islas Juan Fernández, Chile, in 130–180 m, and is compared to other members of the family. All Recent species of the Pholadomyoidea are also listed to facilitate access to the relevant literature.

Key words: Pholadomyoidea, Parilimyidae, Pholadomyidae, *Panacca*, Chile.

INTRODUCTION

In allocating a backlog of miscellaneous eastern Pacific bivalves in the Natural History Museum of Los Angeles County, a single right valve of a previously undescribed species of *Panacca* was encountered. This represents the first Recent record of the Pholadomyoidea from the eastern Pacific. This paper provides a name and description for this species and a list with references for the 14 named and one unnamed Recent members of the Pholadomyoidea.

All members of the Pholadomyoidea are rare, fragile and represented in collections by only a few specimens. Thus far, the anatomy of only two taxa have been studied, as indicated below.

SYSTEMATIC ACCOUNT

Superfamily Pholadomyoidea Gray, 1847

Family Parilimyidae Morton, 1982

Anatomically this family differs from the Pholadomyidae in having a smaller pallial sinus, in having large taenioid muscles, lacking pedal retractors, in having radial mantle glands, reduced labial palps, an extensively muscularized gut, having a type II rather than a type VI stomach, with a large left pouch, and in lacking an opisthopodium (Morton, 1982: 205, table I).

These differences are based on the anatomy of a single species, *Parilimyia fragilis* (Greig, 1920), and additional species must be

examined before relationships are completely clear.

Genus *Panacca* Dall, 1905

Panacca Dall, 1905: 143, new name for *Aporema* Dall, 1903: 1532, *non* Scudder, 1890: 369–370, pl. 20 [Insecta]. Type species (original designation): *Pholadomya arata* Verrill & Smith, in Verrill, 1881. Recent, New England.

Notomya Cotton, 1931: 342, *non* M'Coy, 1847: 303 [Bivalvia: Megadesmidae]. Type species (original designation): *Pholadomya tasmanica* Hedley & May, 1914. Recent, Tasmania.

Shell cuneate, anterior end much shorter, with conspicuous radial sculpture.

Runnegar (1974: 928) suggested that the Cretaceous genus *Procardia* Meek, 1871: 184, might prove to be a senior synonym of *Panacca* (type species, by monotypy, *Isocardia? hodgei* Meek, 1871: 183–184); this clearly merits additional investigation.

Panacca chilensis, new species
(Figures 1, 2)

Type Material & Locality

LACM 2876, holotype, a right valve; length, 21.0 mm; height, 11.3 mm; width, 6.5 mm. LACM 65–101, off west side of "Juan Fernández Island" [Isla Robinson Crusoe], Islas Juan Fernández, Chile (33°34–41'S, 78°45–55'W); 130–180 m; *Anton Bruun* Cruise 12; 13–15 December 1965.

Description

Shell cuneate, much longer posteriorly (beaks at 25% from anterior end). Entire exterior surface covered with minute granules, most coarse ventrally and posteriorly, and moderate commarginal growth lines. Anterior slope rounded, slightly sinuous, with commarginal growth lines only; central slope with 11 conspicuous radial ribs, smallest posteriorly, lower dorsally, more elevated ventrally, scalloping ventral margin; with three much finer radial ribs posterior to these; posterior end produced; posterior slope with commarginal growth lines only.

Ligament external, approximately 2.8 mm long, seated on a low nymph. Anterior adductor muscle scar elongate; pallial line conspicuous, with a small sinus; anterior adductor muscle scar larger, rounded. Taenioid muscle scar conspicuous (Fig. 2).

DISCUSSION, COMPARISONS AND LIST OF SPECIES

The genera within the Parilimyidae are much in need of further evaluation. Morton (1982) hesitated to synonymize *Panacca* with the earlier-named *Parilimya*, because it had not then been shown that species placed in *Panacca* have large taenioid muscles. The large scar in the middle of the holotype of *Panacca chilensis* shows that such a muscle is indeed present (Fig. 2). This leaves only the cuneate shape and sinuous anterior margin of the six species of *Panacca* to distinguish them from those placed *Parilimya*.

No characters seem to separate *Nipponopanacca* from *Parilimya*, and they are here regarded as synonyms. Although Matsukuma (1989) cited Morton's (1982) detailed anatomical study of *Parilimya*, he relied on shell characters for his arrangement of genera, with *Nipponopanacca* placed as a subgenus of *Pholadomya*.

The situation is further complicated by the substantial fossil record of seemingly related forms (Cox & Newell, 1969: 828–838; Runnegar, 1974: 927–928). Indeed, Runnegar suggests that the Cretaceous genus *Procardia* Meek, 1871, may be a senior synonym of *Panacca*; if true, and if *Panacca* and *Parilimya* were also synonymized, *Procardia* would be the earliest name.

Until a comprehensive comparative review is made of all the Recent species, together

with consideration of the genera based on fossil taxa, I hesitate to propose further synonymies at the generic level.

Genus *Panacca* Dall, 1905

Panacca africana (Locard, 1898: 165–167, 474, pl. 7, figs. 42–45, ex Fischer ms) [*Pholadomya*], from 2,083–2,324 m off the west coast of Morocco, is closest to *P. chilensis* and differs in having a more rounded, less produced anterior end and 10–12 major radial ribs with smaller ribs between them (Fig. 3).

Panacca arrata (Verrill & Smith, in Verrill, 1881: 301–302) [*Pholadomya*], type species of *Panacca*, from 126–238 m off Martha's Vineyard, Massachusetts, has much finer sculpture. See also Verrill (1882: 567, 587, pl. 58, fig. 37; 1884: 278, 292, pl. 30, figs. 4–6), Dall (1889: 64, pl. 45, figs. 4–6, pl. 65, figs. 133–134), Morton (1982: 162, pl. 1), and Johnson (1989: 22) (Fig. 4).

Panacca locardi (Dall, 1903: 1532) [*Pholadomya*], based on "*Pholadomya arata* Verrill & Smith, in Verrill, 1881," of Locard (1898: 167–168, 475, pl. 8, figs. 1–5), from 1,130 m off west Africa, like *P. arrata*, is covered with finer sculpture (Fig. 5). This was a new species based on Locard's description and figures and not the renaming of a homonym, as indicated by Boss et al. (1968: 190).

Panacca sumatrana Thiele & Jaeckel, 1931 (pp. 244–245, pl. 5, fig. 123), from 175 m off Siberut Island, Indonesia, differs in being more trigonal, and in having 19 radial ribs, which extend onto the anterior slope (Fig. 6).

Panacca tasmanica (Hedley & May, 1914: 132–133, 3 text-figs.) [*Pholadomya*], type species of *Notomya* Colton, 1931 (*non* M'Coy, 1847), from 91 m off Port Arthur, Tasmania, Australia, is trigonal and also differs in having 19 radial ribs, which extend onto the posterior slope (Fig. 7).

Genus *Parilimya* Melvill & Standen, 1899

Parilimya Melvill & Standen, 1899. Type species (monotypy): *Pholadomya (Parilimya) haddoni* Melvill & Standen, 1899. Recent, Torres Straits.

Nipponopanacca Habe, 1977: 303. Type species (original designation): *Pholadomya (Panacca) sakuraii* Habe, 1958a. Recent, Japan.

Species that remain here are ovate to ovate-elongate, rather than having the cuneate shape of *Panacca*, and they do not

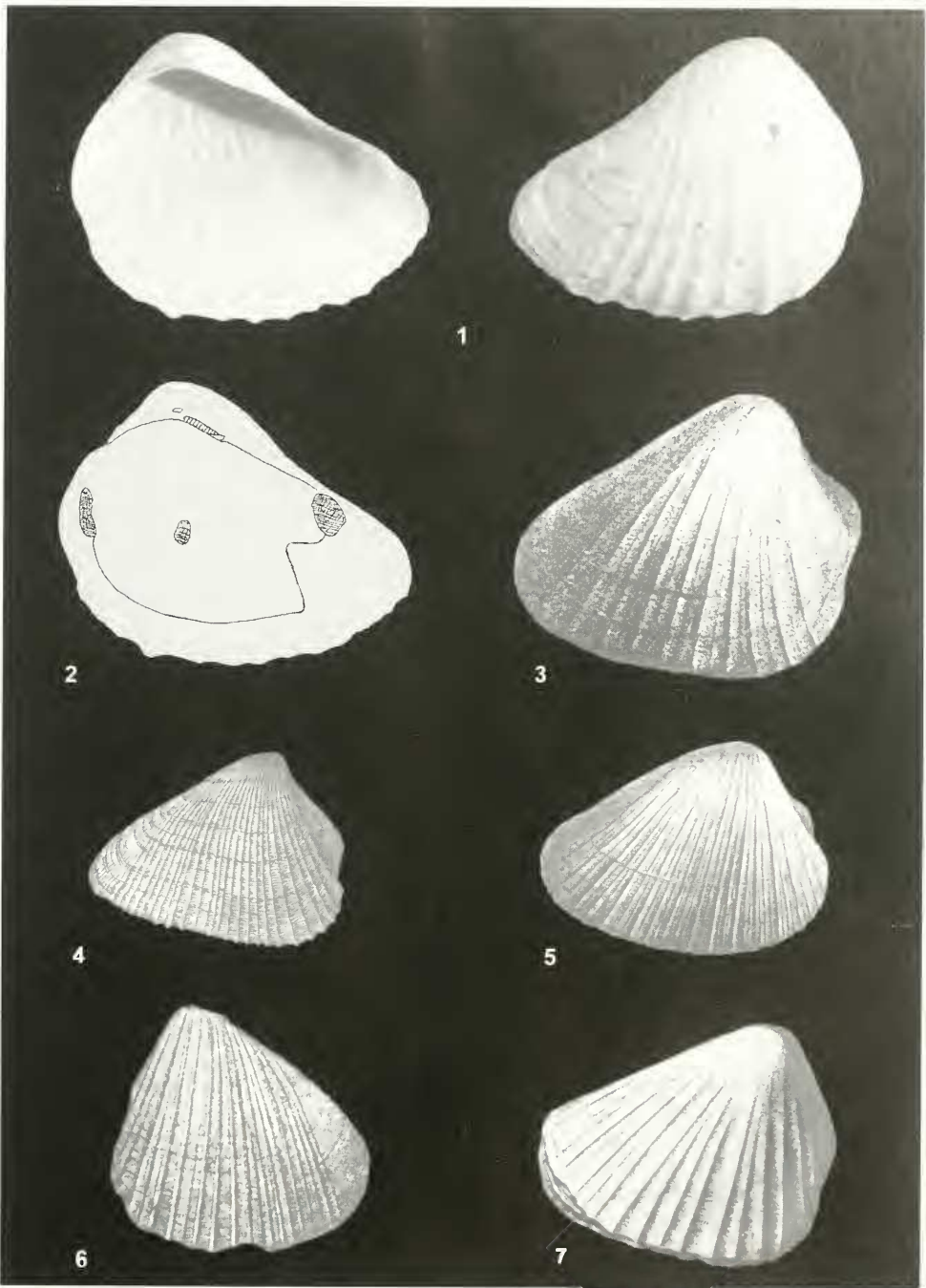


FIG. 1, 2. 1, *Panacca chilensis*, new species; right valve, holotype, LACM 2876; length, 21.0 mm. 2, camera-lucida sketch showing positions of adductor muscle scars, pallial line and sinus, and taenioid muscle scar (near center).

FIG. 3. *Panacca africana* (Locard, 1898), right valve, from Locard (1898: pl. 7, fig. 42); original specimen length, 13.7 mm.

FIG. 4. *Panacca arrata* (Verrill & Smith, in Verrill, 1881), right valve, from Verrill (1882: pl. 58, fig. 37); original specimen length, 36 mm.

FIG. 5. *Panacca locardi* (Dall, 1903), right valve, from Locard (1898: pl. 8, fig. 1); original specimen length, 26.7 mm.

FIG. 6. *Panacca sumatrana* Thiele & Jaeckel, 1931, left valve, from Thiele & Jaeckel (1931: pl. 5, fig. 123); original specimen length, 32.5 mm.

FIG. 7. *Panacca tasmanica* (Hedley & May, 1914), right valve, from Hedley & May (1914: 133, text-fig.); original specimen length, 34 mm.

have its sinuous anterior margin. Several have more numerous fine radial ribs.

Parilimya fragilis (Grieg, 1920: 8, pl. 1, figs. 5–7) [*Pholadomya*], from 1,100 m off Nova Scotia is thin, ovate-trigonal, with 18 radial ribs concentrated on the central slope. See also Soot-Ryen (1966: 12–15, pl. 1, fig. 6, text-figs. 6, 8–10) and Morton (1982).

Parilimya haddoni (Melvill & Standen, 1899: 203–206, pl. 11, fig. 22) [*Pholadomya* (*Parilimya*)], from 10 m off Warrior Island, Torres Straits, is ovate-subquadrate, smooth at both ends, with 20 fine radial threads. See also Morton (1982: 168–170, pl. 4 and figs. 4, 5).

Parilimya levicaudata (Matsukuma, 1989: 211–213, 214–215, 218–219, pl. 1, figs. 7–12, 220–221, pl. 2, figs. 7, 8) [*Pholadomya* (*Nipponopanacca*)], from 50–60 m off Cape Noshap, Wakkanai, Hokkaido, is ovate-elongate, with a long posterior end and is covered by fine radial threads.

Parilimya loveni (Jeffreys, 1882: 934, pl. 70, fig. 7) [*Pholadomya*], from stations off Portugal and Spain (type locality not yet restricted) in 523–1,314 m, is ovate and covered by 32 fine radial ribs. See also Warén (1980: 51) and Morton (1982: 166, fig. 3).

Parilimya maoria (Dell, 1963: 206–207, pl. 1, figs. 1, 2) [*Pholadomya*], from 622 m between Alderman and Red Mercury islands, North Island, New Zealand, is ovate-elongate, with 13 radial ribs concentrated on the central slope and with radial threads throughout. See also Powell (1979: 431, pl. 78, fig. 16) and Morton (1982: 166–167, pl. 3 and fig. 2).

Parilimya pacifica (Dall, 1907: 172–173) [*Pholadomya*], from 80 m off Hakodate and 196 m off Nagasaki, Japan, is oval, heavy, smooth on both ends, and has 11 strong radial ribs. See also Dall (1909a: 115–117; 1909b: 142–143; 1925: 24, pl. 29, figs. 8, 9), Habe (1958a: 275, pl. 13, fig. 7), Boss et al. (1968: 235), Morton (1982: 171–172, pl. 5 and fig. 6), and Matsukuma (1989: 209–210, 214, 220–221, pl. 2, figs. 4–6).

Parilimya sinica (Xu, 1992: 211–213, text fig.) [*Pholadomya* (*Nipponopanacca*)], from an unknown depth in the Okinawa Trough, East China Sea, is ovate-elongate, with low commarginal lamellae and pustules radially arranged only on the beaks. See also Xu (1999: 111, fig. 71), but with the journal and pagination of the original description misquoted.

Parilimya sukurai (Habe, 1958a: 179–180, 176, fig. 4) [*Pholadomya* (*Panacca*)], from 200 m off Honshu, Japan, is ovate, slightly truncate anteriorly, and has fine radial

threads. See also Habe (1977: 303–304, pl. 64, fig. 3) and Matsukuma (1989: 210–211, 214, 218–219, text-fig. 1, pl. 1, figs. 1–6).

Parilimya sp. from an unknown depth off Taiwan is oval, with commarginal undulations and radial rows of pustules (Matsukuma, 1989: 213–214, 215, 220–221, pl. 2, figs. 1–3, as “*Pholadomya* (*Nipponopanacca*)”).

Family Pholadomyidae Gray, 1847: 194

Genus *Pholadomya* G. B. Sowerby I, 1823

Pholadomya G. B. Sowerby I, 1823: 2 pp., 1 pl. Type species (subsequent designation of Gray, 1847: 194): *Pholadomya candida* G. B. Sowerby I, 1823: 2 pp., 1 pl. Recent, Caribbean. See also Runnegar (1972, 1979), Morton (1980), Gibson-Smith & Gibson-Smith (1980), and Díaz & Borrero (1995). Morton (1980) contains a detailed anatomical account.

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